CLAIMS

1. Artificial antibodies, characterised in that they consist of polymers that carry specific binding sites mimicking the properties of antibodies.

2. Artificial antibodies according to claim 1, characterised in that the polymers are prepared by polymerisation of polymerisable monomers carrying functional groups and crosslinking monomers.

3. Artificial antibodies according to claim 1 or 2, characterised in that the polymers are prepared by non-covalent polymerisation.

4. Artificial antibodies according to claim 2 or 3, characterised in that the polymerisable monomers carrying functional groups are chosen among negatively charged monomers such as methacrylic acid, itaconic acid, basic monomers such as vinylpyridine, vinylimidazole, hydrophobic monomers carrying alkyl chains, monomers allowing π-π-interactions, van der Waals forces.

5. Artificial antibodies according to any one of the preceding claims claims, characterised in that the polymers are built up of methacrylic acid cross-linked by ethylene glycol dimethacrylate.

6. Artificial antibodies according to any one of the preceding claims, characterised in that the polymers are biocompatible.

7. Artificial antibodies according to claim 6, characterised in that they are of a size of not more than 5 µm, preferably 10-100 nm.

8. Artificial antibodies according to any one of the preceding claims, characterised in that the binding sites are specific for a compound chosen from the group consisting of drugs, metabolites, nucleotides, nucleic acids, carbohydrates, proteins, hormones, toxins, steroids, prostaglandins and leukotrienes.

9. Artificial antibodies according to any one of the preceding claims, characterised in that the binding sites are specific for theophylline.

10. Artificial antibodies according to any one of claims 1-8, characterised in that the binding sites are specific for diazepam.

11. A method for producing artificial antibodies, characterised in that polymerisable monomers carrying functional groups and crosslinking monomers are polymerised in the presence of a print molecule and subsequently the print molecule is removed, leaving specific binding sites complementary to the print molecules.

12. A method according to claim 11, characterised in that the polymerisation is a non-covalent polymerisation.

13. A method according to claim 11 or 12, characterised in that the polymerisable monomers are chosen among negatively charged monomers such as methacrylic acid, itaconic acid, basic monomers such as vinylpyridine, vinylimidazole, hydrophobic monomers carrying alkyl chains, monomers allowing π-π-interactions, van der Waals forces.

14. A method according to any one of claims 11-13, characterised in that the polymerisable monomers are methacrylic acid and the crosslinking monomers are ethylene glycol dimethacrylate.

15. A method according to any one of claims 11-14, characterised in that the polymers are made into a size of not more than 5 µm, preferably 10-100 nm.

16. A method according to any one of claims 11-15, characterised in that the print molecule is chosen from the group consisting of drugs, metabolites, nucleotides, nucleic acids, carbohydrates, proteins, hormones, toxins, steroids, prostaglandins and leukotrines.

17. A method according to any one of claims 11-16, characterised in that the print molecule is theofylline.

18. A method according to any one of claims 11-16, c h a r a c t e r i s e d in that the print molecule is diazepam.

19. A method for determination of an organic molecule in a fluid sample, c h a r a c t e r i s e d in that a known amount of the organic molecule provided with a label is added to the sample, the sample is contacted with artificial antibodies as claimed in any one of claims 1-9 having specific binding sites for the organic molecule, whereby the labelled and unlabelled organic molecules are competitively bound to the binding sites, and the labelled organic molecule is determined either unbound in the supernatant or bound by the polymer.

20. A method according to claim 19, c h a r a c - t e r i s e d in that the label is chosen from the group consisting of radioligands, enzymes, biotin, steroids, fluorochromes, electrochemiluminescent compounds, gold.

21. Use of the method according to claim 19 or 20 in heterogenous or homogenous immunoassays.

22. Use according to claim 21 in homogenous imunoassays, whereby the artificial antibodies are of a size of not more than 5 µm, preferably 10-100 nm.

23. A method for separation or isolation of an organic molecule from a fluid sample, c h a r a c t e - r i s e d in that the sample, labelled or not, is contacted with an excess of artificial antibodies as claimed in any one of claims 1-9 having specific sites for the organic molecule, whereby the organic molecule is bound to the binding sites, and optionally the organic molecule is measured bound to the artificial antibodies or eluted from the antibodies.

24. A method of therapy or diagnosis, c h a r a c - t e r i s e d in administration of artificial antibodies to a mammal body, which artificial antibodies consist of a biocompatible polymer carrying specific binding sites mimicking the properties of antibodies towards an organic molecule.

25. A method according to claim 24, c h a r a c - t e r i s e d in that an extracorporal device containing the artificial antibodies is coupled to the body via a shunt in the bloodstream, and the bloodstream is passed through the device.

26. A method according to claim 23 or 24, c h a - r a c t e r i s e d in that the artificial anitbodies are of a size of not more than 5 µm, preferably 10-100 nm.

ADD B'

add C'

add E'